

Williams as an inventor in accordance with 37 C.F.R. §1.48(b). A petition and the fee set forth 37 C.F.R. §1.17(i) are enclosed.

REMARKS

This Amendment is submitted in response to the Office Action dated February 17, 1999. Favorable reconsideration of the application, as amended, is respectfully requested.

In the Office Action, Claims 1-18 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The language of the new claims is believed to meet the requirements of 35 U.S.C. §112, second paragraph.

Claims 1-18 were rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,773,063 to Knueven in combination with U.S. Patent No. 5,310,549 to Bull. In view of the deletion of Richard Alan Williams as an inventor of the present application, Carl Joseph Knueven is the sole inventor of the application. The inventorship of the present application is the same as the inventorship of the cited Knueven patent. Also, both the Knueven patent and the present application are assigned to the Jones-Hamilton Company. Therefore, the Knueven patent is no longer citable as prior art under 35 U.S.C. §103(a) against the present application.

The Bull patent discloses that sodium bisulfate can be used as an acidulant in a disinfectant composition for disinfecting food processing equipment. However, the Bull patent does not teach or suggest the use of sodium bisulfate as a food acidulant. There is no suggestion in the Bull patent of adding sodium bisulfate to a food to enhance the flavor, prevent spoilage, or otherwise positively affect the food. The Bull patent only discloses the use of sodium bisulfate to lower the pH of the disinfectant composition. The disinfectant composition is diluted in water to a very low concentration (col. 6, lines 44-50) before being used to disinfect the food processing equipment, so the amount of sodium bisulfate which could be added to food processed by the equipment would be insignificant. This contrasts with food

acidulants, which are consumed in significant quantities as part of the food. Therefore, it is respectfully submitted that the present invention is nonobvious in view of the Bull patent.

The newly cited *Hawley's Chemical Dictionary* discloses at page 1050 that sodium bisulfate can be used in the manufacture of foods. However, this disclosure is extremely general. There is no teaching that sodium bisulfate can be used as an acidulant in foods. This disclosure could mean that sodium bisulfate is used as a processing chemical during the manufacture of the food, but it is not present in the final food product, or it does not function as an acidulant in the final food product. At pages 16-17 of *Hawley's Chemical Dictionary*, sodium bisulfate is not disclosed as an acidulant:

"Acidulant: Any of a number of acids (chiefly organic) either occurring naturally in fruits and vegetables or used as additives in food processing. Commonly used acidulants are citric, acetic, fumaric, ascorbic, propionic, lactic, adipic, malic, sorbic, and tartaric acids."

Thus, sodium bisulfate is not considered in the same class of products as the known acidulants. The majority of known acidulants are organic acids, which are common ingredients in foods, and which are often naturally occurring in foods. Sodium bisulfate is not an organic acid. Sodium bisulfate does not come to mind when a person thinks of acids for use as acidulants in foods. It does not have an "acid" handle on it.

Moreover, there is no teaching or suggestion in *Hawley's Chemical Dictionary* of the properties of a sodium bisulfate product that would make it suitable for use as an acidulant in foods. The new claims require a sodium bisulfate product containing less than 0.003% heavy metals, less than 0.05% water insoluble substances and less than 0.003% selenium. It is critical to keep these impurities below the defined levels to assure acceptable properties of the resulting food product. The Jones-Hamilton sodium bisulfate product is manufactured by a process that keeps the amounts of impurities below these levels. It was not obvious beforehand that commercial

quantities of sodium bisulfate could be produced having such low levels of impurities. Applicant believes that previous commercial sodium bisulfate products had too many impurities for acceptable use in foods.

Prior to the present invention, sodium bisulfate had not been approved by the Food and Drug Administration for use in foods. The Jones-Hamilton sodium bisulfate product with the low levels of impurities has now been approved by the FDA: a copy of a letter is enclosed in which the FDA does not question that Jones-Hamilton's sodium bisulfate product is generally recognized as safe for use in foods. The lack of previous approval by the FDA suggests that *Hawley's Chemical Dictionary* is not an effective reference for the use of sodium bisulfate as an acidulant in foods. How could sodium bisulfate be used as an acidulant if it was not approved for use as an acidulant?


Furthermore, it was not known beforehand that sodium bisulfate would function well as an acidulant in foods. One of the important functions of an acidulant is to impart a desirable sour taste to the food. Organic acids such as citric acid, malic acid and phosphoric acid were known to impart a desirable sour taste, but it was not known beforehand whether sodium bisulfate would function as well. The attached Declaration of Carl J. Knueven presents the results of a study in which the flavor profile of sodium bisulfate was compared with those of citric acid, malic acid and phosphoric acid. The study found that the sour intensity of the sodium bisulfate linearly increased with concentration. The sour intensity line of the sodium bisulfate had a steeper slope than those of the organic acids. At higher concentrations, the sodium bisulfate was higher in sour intensity than the organic acids. As a result, significantly less sodium bisulfate is needed to provide a desired sour taste. The sodium bisulfate was found to have no off-flavors.

In the prior art made of record and not relied upon, and in the newly cited U.S. Patent No. 4,374,152 to Loter, there is no teaching or suggestion of the properties of a sodium bisulfate product that would make it suitable for use as an acidulant in foods, specifically the low levels of impurities defined above.

The Nisperos-Carriedo et al. patent is a defective reference because the disclosure of sodium "bisulfate" as a preservative at column 3, line 18 is a misspelling. Sodium "bisulfite" is known to be a preservative, not sodium bisulfate. In Table 6 at column 9, the correct spelling of sodium bisulfite is disclosed.

In view of the amendments and above remarks, it is respectfully submitted that the claimed invention is nonobvious over the cited references. Accordingly, it is believed that the application is in condition for allowance.

Respectfully submitted,


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